

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* ANDREW P. GODBEHERE, STEPHEN WILLIAMS  
and ROBERT D. SPEAR

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Appeal No. 2003-0401  
Application 09/490,954

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ON BRIEF

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Before ABRAMS, OWENS and NASE, *Administrative Patent Judges*.  
OWENS, *Administrative Patent Judge*.

*DECISION ON APPEAL*

This appeal is from the final rejection of claims 15, 16, 27 and 33. Claims 17-26 and 34-36 have been allowed. Claims 28, 29, 31, 32, 37 and 38 stand withdrawn from consideration by the examiner as being directed toward a nonelected invention.

### *THE INVENTION*

The appellants claim a method for making, from a multi-axial fabric, a skin for a member of a body. Claim 15 is illustrative:

15. A method of constructing a skin for a member of a body such as an aircraft, the method comprising the steps of

providing a multi-axial fabric having at least three differently oriented fiber layers,

forming first and second pieces from said multi-axial fabric so that said first and second pieces are shaped to correspond respectively to a shape of a member on one side of said body to be covered by said skin and to a shape of a similar member on an opposite side of said body,

inverting one of said first and second pieces, and

placing said one of said first and second pieces on the other of said first and second pieces to form said skin for said member.

### *THE REFERENCES*

Benzinger et al. (Benzinger)	3,617,613	Nov. 2, 1971
Elrod	4,571,355	Feb. 18, 1986
Hunt	4,741,943	May 3, 1988
Palmer et al. (Palmer)	5,809,805	Sep. 22, 1998

"Prepreg Flipper", 31 IBM Technical Disclosure Bulletin 455-56 (Oct. 1, 1988).

### *THE REJECTIONS*

The claims stand rejected as follows: claims 15, 16 and 27 under 35 U.S.C. § 112, second paragraph, as being indefinite, and claims 15, 16, 27 and 33 under 35 U.S.C. § 103 as being obvious

over Hunt in view of Elrod, Palmer and either Benzinger or the IBM Technical Disclosure Bulletin.

*OPINION*

We reverse the aforementioned rejections.

*Rejection under 35 U.S.C. § 112, second paragraph*

The examiner argues that it cannot be ascertained whether the preamble language "body such as an aircraft" limits the body to an aircraft (answer, pages 4-5 and 8-9).

As stated in the *Manual of Patent Examining Procedure* (MPEP) § 2173.02 (8<sup>th</sup> ed., rev. 1, Feb. 2003), "[t]he mere use of the phrase 'such as' in the claim does not by itself render the claim indefinite. Office policy is not to employ *per se* rules to make technical rejections." The same section of the MPEP indicates that when an examiner rejects a claim on the ground that "such as ..." is vague and indefinite, the examiner should provide an analysis as to why one of ordinary skill in the art would not have been able to ascertain the meaning of the claim language in light of the specification.

The examiner has merely relied upon a *per se* rule that "such as" renders the claims indefinite. The examiner has not provided a reason as to why the meaning of "body such as an aircraft", when interpreted in light of the specification, would not have

been reasonably ascertainable by one of ordinary skill in the art, and no such reason is apparent. Accordingly, we reverse the rejection under 35 U.S.C. § 112, second paragraph.

*Rejection under 35 U.S.C. § 103*

Both of the appellants' independent claims require that a length of multi-axial fabric having at least three differently oriented fiber layers is formed into shaped pieces, and that a piece is inverted and placed upon another piece.

The examiner relies upon figures 3A and 3B of Hunt for a teaching that it was known in the art to arrange a mirror image of a plurality of prepreg plies about a plane of symmetry when forming an aircraft wing (answer, page 5).

The examiner relies upon figures 3, 4, 7 and 8, and column 7, lines 29-66 of Elrod for a suggestion to use woven bi-axial or tri-axial fabrics instead of prepreg unidirectional plies to make an aircraft wing structure (answer, pages 5-6).

The examiner relies upon column 3, lines 51-55, column 4, lines 42-49, column 9, lines 24-57, and figure 3 of Palmer for a suggestion to invert a multi-axial fabric and stitch it to

another multi-axial fabric to form a mirror image arrangement of the plies (answer, pages 6-7).<sup>1</sup>

Benzinger discloses a low-cost, readily punchable printed circuit board base laminate formed by cutting into sheets a prepreg comprised of an epoxy-impregnated woven fiberglass facing sheet laminated to an epoxy-impregnated nonwoven fiberglass half-core, inverting one sheet and placing the half-core against the half-core of another sheet to form a final composite, the facing sheets and the half-cores having weights selected such that the final composite has, after lamination under heat and pressure, the desired base laminate thickness (col. 1, lines 57-61; col. 2, lines 28-36). The examiner relies upon Benzinger for an indication that cutting a single fabric and inverting one piece onto another piece to form a mirror image structure was known (answer, pages 7-8).<sup>2</sup> Regarding the inverting, Benzinger discloses (col. 2, lines 28-36):

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<sup>1</sup> Palmer indicates that the fabric sheets are useful for making skins of aircraft parts (col. 1, lines 21-23).

<sup>2</sup> The portion of Benzinger relied upon by the examiner is the example wherein Benzinger states (column 4, lines 32-34): "The prepreg was cut into sheets and one of a pair of such sheets inverted to place core surfaces of the sheets in engagement to form a prepreg composite having the desired core thickness."

Specifically, the invention contemplates the utilization of a single fiber glass facing sheet to transport a previously formed half-thickness core during the resin impregnating and prepreg curing operations within a conventional horizontal treater; the weight of the facing sheet and half-core combination being adjusted so that by simply inverting the combination on another combination with the half cores thereof in engagement a final composite of desired thickness is obtained after laminating under heat and pressure.

The IBM Technical Disclosure Bulletin discloses a multilayered sheet formed by cutting a roll of epoxy resin-impregnated glass fiber cloth prepreg into rectangular sheets and inverting alternate sheets to ensure neutralization of inherent stresses of the glass fiber cloth during subsequent operations to form a printed circuit board (page 1). Specifically, the IBM Technical Disclosure Bulletin states (page 1):

Prepreg, used in the manufacture of multilayered printed circuit boards, consists of continuous glass fiber cloth impregnated with liquid epoxy resin which is then dried to remove residual solvents. Rolls of prepreg are cut into rectangular sheets, stacked and interleaved with copper sheets to form a layup which is placed under pressure, heat, and vacuum to cure the epoxy to a rigid laminate. Because the laminate must maintain good bonding between layers, particular attention has to be paid to environmental conditions and to the accuracy of the stacking operation which requires the inversion of alternate sheets to ensure neutralization of inherent stresses of the glass cloth during subsequent lamination operations.

The examiner argues that "[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the techniques of Prepreg Flipper [the IBM Technical Disclosure Bulletin] or Benzinger et al to attain a mirror image arrangement of inverted prepreg multi-axial fabrics as suggested would have been desirable as evidenced by Palmer et al when making a skin for an aircraft from the multi-axial fabrics as suggested by Hunt and Elrod" (answer, page 8).

The appellants argue that there is no suggestion in the references to combine the references from the aircraft skin-making art with the references from the printed circuit board art (brief, page 6).

The examiner responds that "[t]he fact that the artisan was aware of inversion for the manufacture of a skin for an aircraft allowed the ordinary artisan to look to suitable inversion operations to form mirror image structures whether it be from the skin manufacture art or not" (answer, page 13), and that "production of plural skins of wings of aircraft in mass production would have clearly entailed the cutting and assembly of multiple plies of the multiaxial fabrics and one skilled in the art in light of the teachings of Benzinger and Prepreg Flipper would have understood that only a single supply of

multiaxial fabric was required in [sic, to] make many of the laminated, mirror image products" (answer, page 15). The examiner, however, has not provided evidence that those of ordinary skill in the art considered inversion operations used to make printed circuit board laminates to be applicable to the manufacture of aircraft skins. Moreover, the examiner's conclusion is based upon the premise that one of ordinary skill in the art would have combined the references, regardless of the above-discussed differences in the structure and function of the multilayered sheets, merely because the multilayered sheet in each of the references can be called a mirror image structure. The examiner has not provided support for that premise.

The examiner argues that "[t]here is simply no reason to believe one skilled in the art at the time the invention was made would not have been led to cut portions from a single supply and invert these cut portions particularly in light of the neutralization of residual stresses in the fabrics (as suggested by Prepreg Flipper) and the need for formation of only a single stock material of half the final thickness of the laminate from which the laminate can be made (Benzinger)" (answer, page 16). This argument is not well taken because, first, the examiner has not established that one of ordinary skill in the art would have



considered the IBM Technical Disclosure Bulletin's neutralization of residual stresses in glass cloth used to make a printed circuit board laminate, or Benzinger's joining of two half-cores to provide the desired thickness of a printed circuit board laminate, to be applicable to aircraft skins. Second, the test for obviousness is not whether the applied references provide no reason to believe that one of ordinary skill in the art would not have carried out the claimed invention. The test is whether the applied prior art would have provided one of ordinary skill in the art with a motivation to carry out the claimed invention and a reasonable expectation of success in doing so. See *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991); *In re O'Farrell*, 853 F.2d 894, 902, 7 USPQ2d 1673, 1680 (Fed. Cir. 1988). The examiner has not established that the disclosures in the IBM Technical Disclosure Bulletin and Benzinger for making printed circuit board laminates would have provided one of ordinary skill in the art with 1) a motivation to apply the disclosed cutting and inversion techniques to the manufacture of the aircraft skins of Hunt, Elrod and Palmer, and 2) a reasonable expectation of success in doing so. As indicated by the above discussion of the examiner's rejection, the record indicates that the motivation relied upon by the examiner for

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combining the teachings of the references so as to arrive at the appellants' claimed invention comes from the appellants' disclosure of their invention rather than coming from the applied prior art and that, therefore, the examiner used impermissible hindsight when rejecting the claims. See *W.L. Gore & Associates v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984); *In re Rothermel*, 276 F.2d 393, 396, 125 USPQ 328, 331 (CCPA 1960).

For the above reasons we conclude that the examiner has not carried the burden of establishing a *prima facie* case of obviousness of the appellants' claimed invention.

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*DECISION*

The rejections of claims 15, 16 and 27 under 35 U.S.C. § 112, second paragraph, and claims 15, 16, 27 and 33 under 35 U.S.C. § 103 over Hunt in view of Elrod, Palmer and either Benzinger or the IBM Technical Disclosure Bulletin, are reversed.

*REVERSED*

NEAL A. ABRAMS	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
TERRY J. OWENS	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
JEFFREY V. NASE	)	
Administrative Patent Judge	)	

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